

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 3, 8, 10, 12, 13, 24, 41, 49, and 50 are presented for consideration. Claims 8, 24, 41 and 49 are independent. Claim 30 has been canceled without prejudice or disclaimer. Claim 49 has been amended to clarify features of the subject invention. Support for these changes can be found in the original application, as filed. Accordingly, no new matter has been added.

Applicant requests favorable reconsideration and withdrawal of the objection and rejections set forth in the above-noted Office Action.

Claim 30 was objected to as being in improper dependent form for failing to further limit the claim from which it depends. In the interest of expediting prosecution, claim 30 has been cancelled. This rejection is therefore deemed to be moot and should be withdrawn.

Turning now to the art rejections, claims 3, 8, 10, 24, 30, 41, 49 and 50 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,236,770 to Hsieh et al. in view of U.S. Patent No. 5,341, 225 to Stein et al. Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Hsieh et al. '770 patent and the Stein et al. patent, further in view of U.S. Patent No. 6,005,688 also to Hsieh et al. Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hsieh et al. '770 patent and the Stein et al. patent as applied above to claim 8, and further in view of U.S. Patent No. 5,239,392 to Suzuki et al. Applicant submits that the cited art, whether taken individually or in combination, does not teach or suggest many features of the present invention, as previously recited in these claims. Therefore, these rejections are respectfully traversed. Nevertheless, Applicant submits that

independent claims 8, 24, 41, and 49, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 8 recites an image scanning apparatus including a movable image sensing unit that scans at least one document image arranged on a document plate while moving relative to the at least one document image. The apparatus also includes a controller that controls the relative movement of the image sensing unit such that when plural document images arranged on the document plate are scanned, the controller moves the image sensing unit a particular distance in a direction opposite to a sub-scanning direction after completion of scanning one of the plural document images before starting to scan the next document image. The controller moves the image sensing unit in the direction opposite to the sub-scanning direction when a larger distance is needed between the one and next document images to accelerate said image sensing unit to a scanning speed.

In another aspect of the present invention, independent claim 24 recites a control program stored on a computer-readable medium for controlling an image scanning apparatus to scan one or more document images arranged on a document plate while moving an image sensing unit relative to the document images. The control program includes the step of controlling the relative movement of the image sensing unit such that the image sensing unit is moved a particular distance in a direction opposite to a sub-scanning direction after completion of scanning a first of the document images arranged on the document plate and before scanning the next document image. The image sensing unit is moved relatively backwardly when a larger distance is needed between the one and next document images to accelerate the image sensing unit to a scanning speed.

In yet another aspect of the present invention, independent claim 41 recites a scanning method including the steps of scanning a plurality of document images arranged on a document plate while moving an image sensing unit relative to the plurality of document images and controlling the relative movement of the image sensing unit such that the image sensing unit is moved a particular distance in a direction opposite to a sub-scanning direction after completion of scanning a first of the plurality of document images arranged on the document plate and before scanning a next of the plurality of document images. The image sensing unit is moved relatively backwardly when a larger distance is needed between the one and next document images to accelerate the image sensing unit to a scanning speed.

In still another aspect of the present invention, independent claim 49 recites an image scanning apparatus including a movable image sensing unit that scans at least one document image arranged on a document plate while moving relative to the at least one document image, and includes a controller that controls the relative movement of the image sensing unit such that when plural document images arranged on the document plate are scanned, the controller moves the image sensing unit to a position after completion of scanning one of the plural document images and before starting scanning a next of the plural document images, and then start scanning of the next document. The position is calculated after scanning the one document image and before scanning the next document image in accordance with a coordinate of the leading edge of the next document and a distance needed to accelerate the image sensing unit to a scanning speed of the next document.

The present invention provides an image scanning apparatus that is capable of successively scanning a plurality of documents arranged on a document plate in an efficient manner by moving a sensor unit over the documents in a sub-scanning direction. The sensor unit

is selectively controlled in such a manner that after completion of scanning one document, the sensor unit can be returned to its home, temporarily stopped or moved backwardly by a particular distance, before starting to scan the next document.

Applicant submits that the cited art, whether taken individually or in combination, does not teach or suggest such features of the present invention, as recited in independent claims 8, 24, 41, and 49.

The Hsieh et al. '770 patent relates to a scanning method of an image scanning system for scanning a plurality of designated areas within a document. The Hsieh et al. '770 patent shows a method of scanning a plurality of designated areas over a platform of an image scanning system in a single pass. Accordingly, the Examiner acknowledges that the Hsieh et al. '770 patent does not teach the feature of moving the image sensing unit in the direction opposite to the sub-scanning direction when a larger distance is needed between the one and next document images to accelerate the image sensing unit to a scanning speed. Therefore, in order to compensate for this deficiency in the Hsieh et al. '770 patent, the Examiner relies on the teachings of Stein et al.

The Stein et al. patent teaches an image scanning system with a carriage 106 and a drive motor 112. In addition, the Stein et al. patent discusses reversing the drive motor so that the carriage returns to a position while it waits for the master processor to determine that more data can be loaded into buffer memory. This position, at which the carriage is held or interrupted, is taught to be such that the carriage is at full velocity when reaching a position to start producing more scan data. The Examiner considers the Stein et al. patent to teach a scanning system that repositions the scanning head in a reverse direction far enough that the scanning head has enough distance to accelerate to the steady scanning speed before scanning begins.

Applicant's invention, as recited in independent claim 8, however, sets forth that the controller moves the image sensing unit in the direction opposite to the sub-scanning direction when a larger distance is needed between the one and next document images to accelerate the image sensing unit to a scanning speed. The Stein et al. patent is not understood to teach this feature, as this patent is directed to scanning of a single document. That is, there can be no distance between one and a next document image in the Stein et al. patent. Accordingly, Applicant submits that the Stein et al. patent fails to overcome the deficiencies with respect to the Hsieh et al. '770 patent. Applicant submits that independent claims 28, 41 and 49 recite similar features as those presented in independent claim 8, and submit, therefore, that these claims patentably distinct aspects of Applicant's invention for reasons similar to those presented above.

For the reasons noted, Applicant submits that the Stein et al. patent does not teach or suggest many features of Applicant's present invention, as recited in independent claims 8, 24, 41 and 49.

The Examiner cites the Hsieh et al. '688 patent for teaching an imaging sensing unit returning to a home position in order to perform calibration of the next document to be read. In addition, the Suzuki et al. patent was relied upon by the Examiner for teaching scanning of photographic film. Applicant submits however, that neither of these citations is understood to teach the above-noted deficiencies with respect to the Hsieh et al. '770 patent and the Stein et al. patent.

For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 8, 24, 41, and 49, is patentably defined over the cited art, whether that art is taken individually or in combination.

Dependent claims 3, 10, 13, and 50 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of the dependent claims is requested.

Applicant further submits that this Amendment After Final Rejection places this application in condition for allowance. This Amendment was not earlier presented because Applicant believed that the prior Amendment placed the application in condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 CFR 1.116.

Applicant also requests favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance.

REQUEST FOR INTERVIEW

If upon consideration of this Amendment, the Examiner still has concerns as to the patentability of the claims, Applicant requests that the Examiner contact Applicant's undersigned representative to arrange an interview.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



Attorney for Applicant's
Steven E. Warner
Registration No. 33,326

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3800
Facsimile: (212) 218-2200

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